NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

PASTURE AND HAYLAND PLANTING

New York (supplement)

(Acres.)
code 512

DEFINITION

Pasture and hayland plantings are the establishing and re-establishing of longterm stands of adapted species of perennial, biennial, or reseeding forage plants. (Includes pasture and hayland renovation. Does not include grassed waterways or outlets on cropland.)

PURPOSE

To reduce erosion and improve water quality, to produce high quality forage, and to adjust land use.

PLANNING CONSIDERATIONS FOR WATER QUALITY AND QUANTITY

I. Quality

A. Effects on erosion and the movement of soil particles, pathogens, and soluble or sediment-attached substances carried by runoff.

B. Effects on the use and management of manure, fertilizers and pesticides with resulting effects on surface and ground water quality.

C. Effects on the visual quality of downstream water resources.

II. Quantity

A. Effects on the water budget, i.e. volume and rate of runoff, infiltration, evaporation, transpiration, percolation and ground water recharge.

WATER QUALITY EFFECTS

A vigorous, thick stand of grass is an effective barrier to the erosive effects of water. Soil surface protection from rain impact is enhanced by improving grass cover, and replacing annual row crops with perennial forages. Healthy perennial grass stands, and the soil biota which they support, maintain high infitration and percolation rates.l/ Where grass/legume stands on pasture or hayland are deficient and will not respond to improved management, surface runoff will have a negative impact on water quality through erosion and transport of animal wastes.

CONDITIONS WHERE PRACTICE APPLIES

On existing pasture and hayland or on land that is converted from other uses. Where insufficient or undesirable forage species exist.

NOTE: Existing pasture or hayland often has sufficient stands of grass to begin a short duration grazing (SDG) system. Under proper management, these stands improve dramatically over time.

SPECIFICATIONS

I. Establishment

A. Soils, Site and Use Selection.

1/ Brady, N.C., The Nature and Properties of Soils, MacMillan Publlshing Co., New York, pp. 53-55.

Tables A and B list pasture and meadow plants and their soil, site and use adaption.

B. Lime and Fertilizer

Soil test results will be available before establishment. It is preferred that lime be applied in the fall and fertilizer in the spring, prior to seeding as per soil test and crop needs.

TABLE A
Grass and Legume Planting Guide

COMMON NAME	BOTANICAL NAME	GROWTH HABIT	COOL	WARM	DROUGHTY	DRY, NOT DROUGHTY	WELL DRAINED	MOD WELL DRAINED	SOMEWHAT POORLY DRAINED	POORLY DRAINED
Alfalfa, Hay type	Medicago sativa	PSB	X	-	-	X	X	X	-	-
Alfalfa, Spreading type	Medicago sativa	PSS	X	-	-	X	X	X	-	-
Bluegrass, Kentucky	Poa pratensis	PlR	X	-	-	-	X	X	X	-
Bluestem, Big	Andropogon gerardi	PlR	-	X	X	X	X	X	-	-
Bromegrass, Smooth	Bromus inermis	PlR	X	-	-	X	X	X	-	-
Canarygrass, Reed	Phalaris arundinacea	PlR	X	-	-	X	X	X	X	X
Clover, Red	Trifolium pratense	PSB	X	-	-	X	X	X	X	-
Clover, White, Ladino	Trifolium repens	PSR	X	-	-	-	X	X	X	-
Fescue, Tall	Festuca arundinacea	PlBR	X	-	-	X	X	X	X	-
Orchardgrass	Dactylis glomerata	PlB	X	-	X	X	X	X	-	-
Ryegrass, Perennial	Lolium perenne	PlB	X	-	-	-	X	X	X	-
Switchgrass	Panicum virgatum	PlB	-	X	X	X	X	X	-	-
Timothy	Phleum pratense	PlB	X	-	-	-	X	X	X	-
Trefoil, Birdsfoot	Lotus corniculatus	PlB	X	-	-	X	X	X	X	-

Growth Habit: P - perennial; l - long lived; s - short lived.
R - rhizomatous or spreads by rootstocks; B - bunch
S - stoloniferous

TABLE B
Grass and Legume Planting Guide

COMMON NAME	Use - Pasture	Use - Hay	Normal Growth pH (1)	Days Tolerant To Spring Flooding
Alfalfa, Hay Type	X	XX	6.5-7.5	14-21
Alfalfa, Spreading Type	XX	-	5.5-7.5	7-14
Bluegrass, Kentucky	XX	X	5.5-7.0	14-21
Bluestem, Big	XX	X	5.5-7.5	7-14
Bromegrass, Smooth	X	XX	5.5-8.0	24-28
Canarygrass, Reed	X	X	5.0-7.5	49+
Clover, Red	X	X	5.8-7.5	7-14
Clover, White, Ladino	X	-	5.5-7.5	7-14
Fescue, Tall	X	X	5.0-9.0	35-63
Orchardgrass	XX	X	5.8-7.5	14-21
Ryegrass, Perennial	XX	X	5.5-7.5	14-21
Switchgrass	XX	X	5.0-8.5	7-14
Timothy	X	XX	5.8-7.5	49-63
Trefoil, Birdsfoot	X	X	5.0-9.0	7-14

XX means better suited for this use than other use.

1 - For optimal growth, a minimum pH of 6.0 is recommended

TABLE C
Varieties or Cultivars Recommended for NewYork

COMMON NAME	VARIETIES (*indicates preferred)
Alfalfa, Hay Type (1)	Many, consult Cornell Recommends
Alfalfa, Spreading Type	Spreader II
Bluegrass, Kentucky	Will come in naturally, no need to plant
Bluestem, Big	Niagara*, Kaw, Rountree
Bromegrass, Smooth	Saratoga, Baylor
Canarygrass, Reed	Palaton*, Venture
Clover, Red	Consult Cornell recommends
Clover, White,	Will come in naturally, except for Ladino type
Fescue, Tall	Forager, Johnstone (endophyte - free seed)
Orchardgrass	Pennlate, Pennmead
Ryegrass, Perennial	Grimalda, Reveille, Bastion, Nestor, Bison (in order of maturity early to late)
Switchgrass	Cave-In-Rock, Blackwell, Trailblazer
Timothy	Climax, Champlain
Trefoil, Birdsfoot	Consult Cornell Recommends

(1) Verticillium wilt resistance strongly recommended

C. Seed

Certified seed will be used. Table C lists adapted varieties. Legumes will be scarified if necessary and inoculated with the proper strain of nitrogen-fixing bacteria immediately before seeding. (Legume seed which has been pre-inoculated longer than 8 hours shall be re-inoculated prior to seeding.

D. Seeding Mixtures

Seeding mixtures will be used as outlined in Table D.

E. Site Preparation

Obstacles should be removed and the area smoothed as needed. Tillage should be limited to the minimum number of operations needed to prepare a seedbed.

Conservation tillage systems including interseeding, are desirable.

No-till considerations: This planting method is most attractive where high erosion hazard exists, where the seeding is following an annual crop, or where tillage is not desirable because of stoniness. When no-tilling into old sods, chemical control of the sod should be achieved the year prior to the seeding. Planting into poorly controlled sods will yield unacceptable results. Consult Cornell Recommends for effective sod control methods. Consideration should be given to utilizing an intermediate forage crop such as

the brassicas, sudangrass, or small grains to help with sod/weed control.

F. Weed Control

Identified weed problems will be controlled prior to seeding. Companion crops can be used. Refer to Cornell Recommends for chemical control. Clipping as needed is essential to insure grass/legume mixture establishment.

TABLE D
SEED MIXTURES

(Cross reference with Table A to select mixes for soil drainage class)

Mixture	Rate lb./ac	Mixture	Rate lb./ac
1. Bromegrass and Alfalfa	7 12	4. Tetraploid rygrass (1) and Alfalfa	2 12
2. Orchardgrass and Alfalfa	5 12	5. Alfalfa interseeded into grass	15
3. Timothy and Alfalfa	6 12	6. Alfalfa pure stand	15-18
7. Bromegrass and Birdsfoot Trefoil (2)	5 8	9. Timothy and Birdsfoot Trefoil	4 8
8. Orchardgrass and Birdsfoot Trefoil	4 8	10. Timothy and Birdsfoot and Alfalfa (3)	4 5 5
11. Reed canarygrass pure stand	10	13. Reed canarygrass and Alfalfa	6 12
12. Reed canarygrass and (4) Birdsfoot Trefoil and Timothy	6 8 2	See Pasture and Hayland Management (510) for additional notes on Reed canarygrass.	
14. Orchardgrass and Red Clover or Ladino Clover	5 8	16. Timothy and Red Clover	5 8
15. Bromegrass and Red Clover	7 8	17. Tetraploid ryegrass and Red Clover	3 8

TABLE D (Continued)
SEED MIXTURES

(Cross reference with Table A to select mixes for soil drainage class)

Mixture	Rate lb./ac	Mixture	Rate lb./ac
18. Timothy and Ladino clover	8 6	19. Timothy and Kentucky Bluegrass and Ladino clover	5 10 6
20. Switchgrass, pure stand	6-8 PLS(5)	For mid-summer pastures, best suited to beef animals	
21. Big Bluestem, pure stand	10-12 PLS(5)		
22. Tall fescue, pure stand	15	Tall fescue is best utilized when the spring growth is cut for hay, then fall growth is pastured after frost, with fescue hay fed as needed. Use endophyte free seed.	
23. Tall fescue, and Ladino clover	8 6		

(1) Tetraploid ryegrasses may be very competitive with alfalfa, these mixtures should not be considered permanent.

(2) Birdsfoot trefoil has lower seeding vigor than alfalfa.

(3) This mix is used for hay on fields with mixed drainage conditions.

(4) Best as a pasture mix for moist (not wet) soils. Timothy is for quick cover. Use low alkaloid reed canarygrass.

(5) PLS is pure live seed pounds. To determine bulk pounds needed, divide PLS by (% purity X % germination).

G. Seeding Methods

Drill - A grass drill is the best method of seeding on level and sloping areas, but the preferred method will depend on slope and conditions of the planting site. Seed must be placed no more than 1/4 to 1/2 inch deep. If the drill does not have a packer wheel system, a cultipacker or roller should be trailed behind. On steep slopes where drilling is not feasible, frost seeding is the alternative method.

Broadcast - Seed may be broadcast by using whirlwind or end gate seeders. Cover seed with 1/4 inch of soil or less. Roll, cultipack, or use some other suitable method to firm seedbed before and after seeding.

Fluid Seeding - A new method of seeding alfalfa which is popular in localized areas of the state. The seed is applied along with liquid fertilizer on conventionally tilled fields only. The field is prepared, cultipacked, seeded, and cultipacked again.

Frost Seeding - This method is usable to introduce legumes such as the clovers, birdsfoot trefoil, or spreading alfalfa into pastures. Broadcast the seed during the spring period when the snow cover has melted off but the soil surface is going through the daily freeze-thaw cycle. Remember to inoculate the legume seed. Competing grasses must be grazed close 80 legume seedlings are not shaded out.

NOTE: Frost seedings are not as reliable as other seeding techniques . However, because of lower costs and the ability to continue to utilize the forage in the pasture, a lower success rate can be overcome with repeated attempts.

H. Time of Seeding

Seedings will be completed during the applicable seeding periods as in Table F.

I. Establishment (First) Year Management.

Plants shall not be grazed or cut until the heights outlined in Table E are reached.

First year grazing should be minimal. There will be no grazing or harvest of warm season grasses until after a hard frost.

Weed competition can be minimized by careful use of sickle bar or rotary mowers. Clip the area with the mower set high to avoid cutting the seedlings, yet still effective in removing the shading effect of the weeds. Removing significant amounts of leaf material from the desired plants will hinder their development to a greater degree than the weeds. See Pasture and Hayland Management (510).

II. Wildlife Habitat Improvement.

When the landowner is interested in improving habitat for foraging wildlife or ground nesting birds, plants to be seeded will be selected that have value for both livestock and wildlife. See Table G. Refer to Specifications for Wildlife Upland Habitat Mgt.(645) and Wildlife Wetland Habitat Mgt.(644) and Associated Biology Technical Notes #19 and #11.

TABLE E
SEEDING DATES FOR FORAGES

Species	Areas with more than 1800 growing degree days		Areas with 1800 or less growing degree days	
	Spring thaw to June 15(1)	August 1 to Sept. 25(2)	Spring thaw to May 30	August 1 to Sept. 1
Alfalfa (1)	X	X	X	X
Kentucky bluegrass	X	X	X	X
Smooth bromegrass	X	X	X	X
Reed canarygrass	X	X	X	X
Red clover (1)	X		X	X
White clover	X		X	X
Tall fescue	X		X	X
Orchardgrass	X		X	X
Timothy	X	X	X	X
Birdsfoot trefoil	X	Aug. 10-30 No-till only	X	Aug. 5-20 No-till only
Warm season grasses	X		X	
Perennial ryegrass	X	X	X	X

(1). On well drained soils, alfalfa and red clover can be seeded through to August 15.

(2). With No-till these dates would be July 23-September 30.

(3). Frost seedings in poorly drained areas are acceptable.

TABLE F
HARVEST MANAGEMENT - FIRST YEAR

Forage	First Year Clipping/Grazing Height
Alfalfa	10”
Smooth Bromegrass	12”
Canarygrass	10”
Red Clover	8”
Tall Fescue	12”
Orchardgrass	12”

TABLE F (Continued)
HARVEST MANAGEMENT - FIRST YEAR

Forage	First Year Clipping/Grazing Height
Timothy	10”
Birdsfoot Trefoil	8”
Perennial Ryegrass	4”
Warm Season Grass	N/A*

*N/A Not applicable - do not graze or harvest during the first year growing season. Clipping weeds above the grass leaf height is desirable to control shading. Light grazing is permitted after the first hard frost.

TABLE G
WILDLIFE UTILIZATION OF GRASSES AND LEGUMES FOR FOOD (F) or COVER (C)

Species	Non-Game Birds	Rabbits	Deer	Turkey	Geese	Ducks & Pheasants
Alfalfa	FC	F	F	F	F	
Bluegrass, Kentucky		F	F	F	F	
Bromegrass, Smooth		F	F	F	F	
Canarygrass, Reed	FC	C	C		FC	C
Clover, Red			F	F		
Clover, White		F	F	F	F	FC
Fescue. Tall			F	F	F	
Orchardgrass	FC		F	F		FC
Ryegrass, Perennial		F	F	F	F	
Timothy	F	F	F	F	F	
Birdsfoot trefoil		F	F	F		
Warm Season Grasses	FC	C	C	C		FC

DOCUMENTATION REQUIRED FOR COMPLETION

A. Field check 30 to 60 days after seeding. Note stand count (minimum of 8 plants of seeded species/sq. ft. to be successful) stand condition, and percent weeds present. Fall seedings will be checked by May 15 the following year.

B SCS-CPA-68 or 69, SCS-CPA-6, or other "record of decisions" initialed and dated containing:

1. Field check notes location. (fields seeded)
2. Fields checked, date of check
3. Tillage used and seeding method.
4. Rates of seed and fertil izer used.
5. Date seeded.